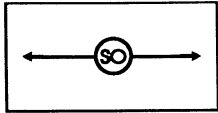


STD & SPEC 3.33



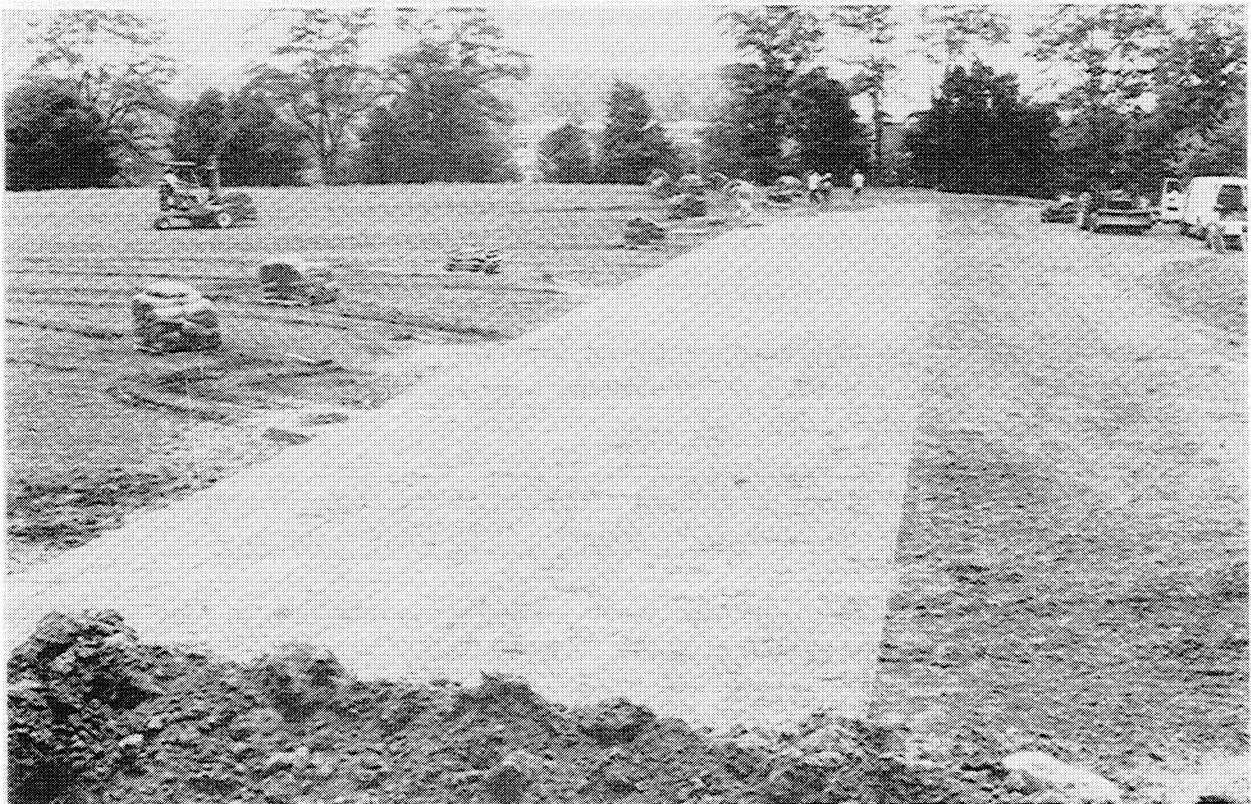
SODDING

Definition

Stabilizing fine-graded disturbed areas by establishing permanent grass stands with sod.

Purposes

1. To establish permanent turf immediately.
2. To prevent erosion and damage from sediment and runoff by stabilizing the soil surface.
3. To reduce the production of dust and mud associated with bare soil surfaces.
4. To stabilize drainageways where concentrated overland flow will occur.
5. For use as a filtering device for sediments in areas prior to achieving permanent stabilization.



Conditions Where Practice Applies

1. Disturbed areas which require immediate vegetative covers, or where sodding is preferred to other means of grass establishment.
2. Locations particularly suited to stabilization with sod are:
 - waterways carrying intermittent flow
 - area around drop inlets or in grassed swales
 - residential or commercial lawns where quick use or aesthetics are factors.

Planning Considerations

The successful establishment of quality turfgrass is difficult in Virginia. Extremes in temperature and moisture availability create severe stresses on both cool and warm season grasses. The selection of appropriate turf-establishment methods requires a great deal of forethought.

A quality turf containing the recommended mixtures and species can be established with either seed or sod. Soil preparation for the two methods is the same.

The advantages of properly installed sod include:

1. Immediate erosion control.
2. An instant green surface with no dust or mud.
3. Nearly year-round establishment capability.
4. Less chance of failure than seed.
5. Freedom from weeds.
6. Quick use of the sodded surface.
7. The option of buying a quality-controlled product with predictable results.

It is initially more costly to install sod than to seed. However, this cost is justified in places where sod can perform better than seed in controlling erosion.

In swales and waterways where concentrated flow will occur, properly pegged sod is preferable to seed because there is no lag time between installation and the time when the channel is protected by vegetation.

Drop inlets which will be placed in grassed areas can be kept free of sediments, and the grade immediately around the inlet can be maintained, by framing the inlet with sod strips.

Sod can be laid during times of the year when seeded grass may fail, so long as there is adequate water available for irrigation in the early weeks.

Ground preparation and proper maintenance are as important with sod as with seed. Sod is composed of living plants and those plants must receive adequate care in order to provide vegetative stabilization on a disturbed area.

Specifications

Soil Preparation

1. Prior to soil preparation, areas to be sodded shall be brought to final grade in accordance with the approved plan.
2. Soil tests should be made to determine the exact requirements for lime and fertilizer. Soil tests may be conducted by the State Laboratory at VPI & SU or a reputable commercial laboratory. Information on state soil tests is available from county or city agricultural extension agents.

Under difficult circumstances where it is not possible to obtain a soil test, the following soil amendments shall be made:

Pulverized agricultural limestone at 90 lbs./1000 sq. ft. (2 tons/acre).

Fertilizer at 25 lbs./1000 sq. ft. (1000 lbs./acre) of 10-10-10 in fall, or 25 lbs./1000 sq. ft. of 5-10-10 in spring.

Note: Equivalent nutrients may be applied with other fertilizer formulations.

These amendments shall be spread evenly over the area to be sodded, and incorporated (if possible) into the top 3 to 6 inches of the soil by discing, harrowing or other acceptable means.

3. Prior to laying sod, the soil surface shall be clear of trash, debris, large roots, branches, stones and clods in excess of 1 inch in length or diameter. Sod shall not be applied to gravel or other non-soil surfaces.
4. Any irregularities in the soil surface resulting from top-soiling or other operations shall be filled or leveled in order to prevent the formation of depressions or water pockets.
5. Areas to be topsoiled and topsoil used shall fulfill the requirements of TOPSOILING, Std. & Spec. 3.30. No sod shall be spread on soil which has been treated with soil sterilants or any other toxic herbicides until enough time has elapsed to permit dissipation of toxic materials.

Quality of Sod

1. Sod used shall be state-certified. Certified turfgrass sod is grown from Certified seed, inspected and certified by the Virginia Crop Improvement Association (VCIA) or the certifying agency in other states. This ensures genetic purity, high quality, freedom from noxious weeds and excessive insect or disease problems. The sod must meet published state standards and bear an official blue "Certified Turf" label on the bill of lading.

**VIRGINIA CROP
IMPROVEMENT
ASSOCIATION**
BLACKSBURG, VIRGINIA



Certified Turf

The turf accompanying this invoice is represented by the producer to be a part of the lot that has been officially field inspected and has met the requirements for "Certified Turf" under the rules and regulations of the Virginia Crop Improvement Association.

No. 255

2. High-quality sod is also available outside of the VCIA certified sod program. When purchasing this sod, the consumer is encouraged to be aware of factors which are important in determining sod quality. High-quality sod will contain the best varieties and be free of serious disease, insect, or weed problems. It will be dense, have good color, and hold together well.
3. Sod shall be machine cut at a uniform soil thickness of 3/4 inch (\pm 1/4 inch) at the time of cutting. This thickness shall exclude shoot growth and thatch.
4. Pieces of sod shall be cut to the supplier's standard width and length, with a maximum allowable deviation in any dimension of 5%. Torn or uneven pads will not be acceptable.
5. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended from a firm grasp on one end of the section.
6. Sod shall not be cut or laid in excessively wet or dry weather.
7. Sod shall be harvested, delivered, and installed within a period of 36 hours.

Choosing Appropriate Types of Sod

The type of sod used must be composed of plants adapted to the locality. Use Table 3.33-A to select the type of sod best suited to your area.

Sod Installation (See Plate 3.33-1)

1. Sod should not be laid on soil surfaces that are frozen.
2. During periods of high temperature, the soil shall be lightly irrigated immediately prior to laying the sod, to cool the soil and reduce root burning and dieback.
3. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and butting tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause drying of the roots.
4. On slopes 3:1 or greater, or wherever erosion may be a problem, sod shall be laid with staggered joints and secured by stapling or other approved methods. Sod shall be installed with the length perpendicular to the slope (on the contour).
5. As sodding of clearly defined areas is completed, sod shall be rolled or tamped to provide firm contact between roots and soil.
6. After rolling, sod shall be irrigated to a depth sufficient that the underside of the sod pad and the soil 4 inches below the sod is thoroughly wet.
7. Until such time a good root system becomes developed, in the absence of adequate rainfall, watering shall be performed as often as necessary to maintain moist soil to a depth of at least 4 inches.
8. The first mowing shall not be attempted until the sod is firmly rooted, usually 2-3 weeks. Not more than one third of the grass leaf shall be removed at any one cutting.

TABLE 3.33-A

**TYPE OF SOD AVAILABLE IN VIRGINIA
AND RECOMMENDED USES**

Kentucky Bluegrass: Adapted to the Northern Piedmont and Mountain Regions. Individual varieties selected must make up not less than 10%, nor more than 35% of the total mixture on a weight basis. All varieties must be certified. Selections can be made from Category I alone or various combinations of Categories I, II and III, as noted.

Category I - Recommended Kentucky Bluegrass Varieties

65% - 100% A-34, Abbey, Aspen, Asset, Baron, Blacksburg, Bristol, Cheri, Chateau, Classic, Coventry, Georgetown, Glade, Haga, Julia, Liberty, Loft's 1757, Merit, Midnight, Monopoly, Plush, Princeton 104, Rugby, Suffolk, Victa

Category II - Special use varieties. If used, must contain at least 65% Category I varieties

Shade Tolerant

10-35% Bristol, Columbia, Georgetown, Glade, Midnight

Low-Maintenance Tolerant

10-35% Columbia, Georgetown, Monopoly, Ram I, Touchdown, Victa

Category III - Promising Kentucky Bluegrass - Limited performance data or seed availability

10-35% Dawn, Estate, Freedom, Kelly

(continued)

TABLE 3.33-A (CONTINUED)

TYPE OF SOD AVAILABLE IN VIRGINIA AND RECOMMENDED USES

Tall Fescue: Adapted to the entire state.

Recommended Tall Fescue Varieties:

90-100% Amigo, Apache, Bonanza, Chieftain, Finelawn 5GL,
Mesa, Rebel II, Shenandoah, Tribute

Promising Tall Fescues

Certified Arriba, Austin, Avanti, Aztec, Cochise, Crossfire,
Eldorado, Hubbard 87, Jaguar II, Maverick II, Monarch, Olympic
II, Phoenix, Safari, Shortstop, Sundance, Taurus, Thoroughbred,
Titan, Tradition, Vegas, Winchester, Wrangler

0-10% Kentucky bluegrass: Baron, Cheri, Columbia,
Monopoly, Nassau, Ram I, Victa

Bermudagrass: Tufcote is adapted to the Richmond-Danville-Newport News triangle. Midiron may be used east of Roanoke and south of Charlottesville. Tifgreen and Tifway may be used to the east and south of Richmond. Vamont may be used east of Roanoke and at lower elevations in southwestern Virginia.

Certified Midiron, Tifgreen[#], Tifway, Tifway II, Tufcote and Vamont

Zoysiagrass: This sod performs best in southeastern Virginia.

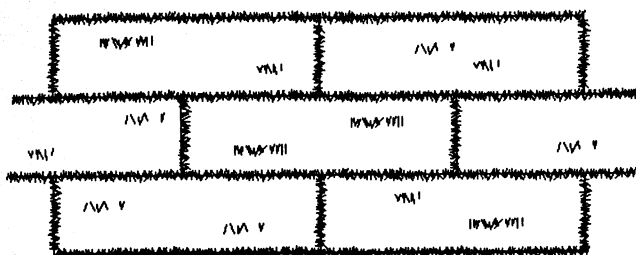
Meyer, Emerald[#]

Note: Common Bermudagrass is not recommended for sod production.

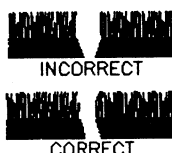
[#] Only recommended in southeastern Virginia.

Source: 1991 Virginia Turfgrass Variety Recommendations, Virginia Crop Improvement Association

SODDING



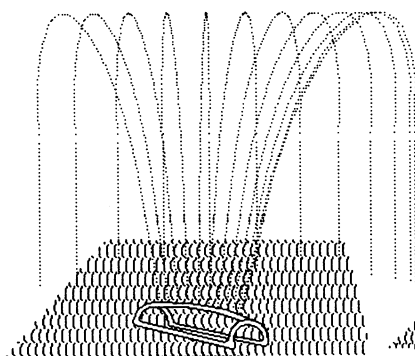
LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.



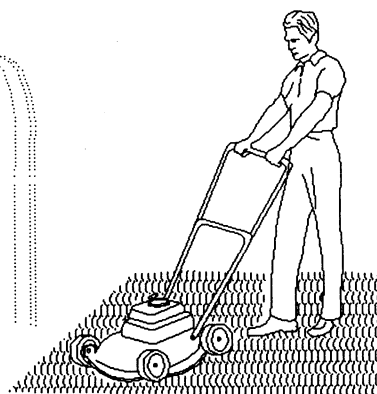
BUTTING — ANGLED ENDS CAUSED BY THE AUTO-MATIC SOD CUTTER MUST BE MATCHED CORRECTLY.



ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

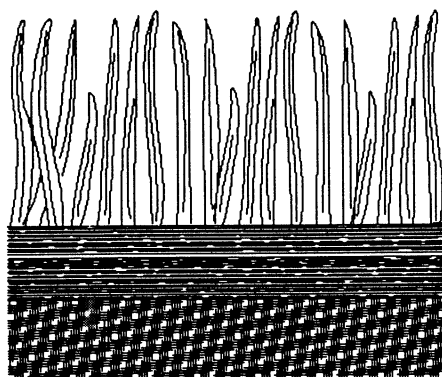


WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.



MOW WHEN THE SOD IS ESTABLISHED — IN 2-3 WEEKS. SET THE MOWER HIGH (2"-3").

APPEARANCE OF GOOD SOD



SHOOTS OR GRASS BLADES. GRASS SHOULD BE GREEN AND HEALTHY, MOWED AT A 2"-3" CUTTING HEIGHT.

THATCH — GRASS CLIPPINGS AND DEAD LEAVES, UP TO 1/2" THICK.

ROOT ZONE — SOIL AND ROOTS. SHOULD BE 1/2"-3/4" THICK, WITH DENSE ROOT MAT FOR STRENGTH.

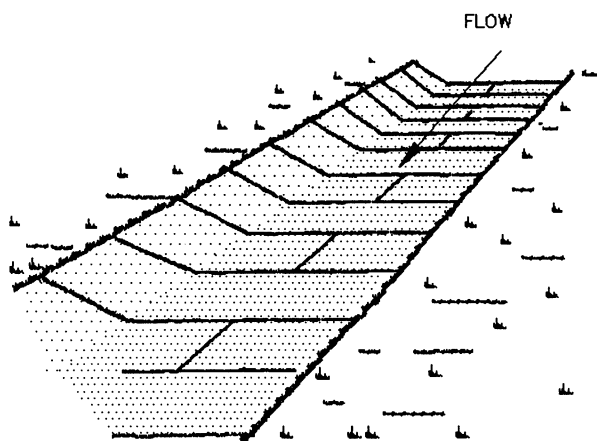
Sodded Waterways

1. Care should be taken to prepare the soil adequately in accordance with this specification. The sod type shall consist of plant materials able to withstand the designed velocity (see STORMWATER CONVEYANCE CHANNELS, Std. & Spec. 3.17).
2. Sod strips in waterways shall be laid perpendicular to the direction of flow. Care should be taken to butt ends of strips tightly.
3. After rolling or tamping, sod shall be pegged or stapled to resist washout during the establishment period. Jute mesh or other netting may be pegged over the sod for extra protection in critical areas.
4. All other specifications for this practice shall be adhered to when sodding a waterway.

Maintenance of Established Sod

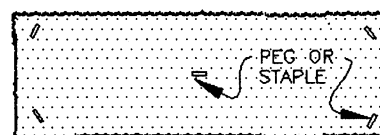
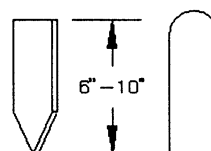
1. During the 2 to 3 week establishment stage, sod shall be watered as necessary to maintain adequate moisture in the root zone and prevent dormancy of sod.
2. No more than one third of the shoot (grass leaf) should be removed in any mowing. Grass height should be maintained between 2 and 3 inches unless otherwise specified.
3. After the first growing season, established sod will require fertilization and may require lime. Follow soil test recommendations when possible, or apply maintenance levels as outlined in Table 3.33-B.

SODDED WATERWAYS

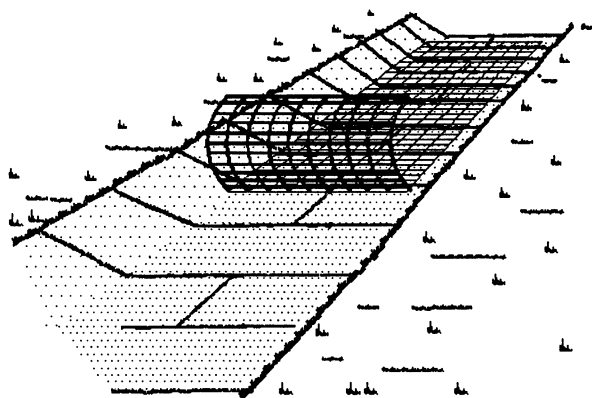


LAY SOD ACROSS THE DIRECTION OF FLOW.

USE PEGS OR STAPLES TO FASTEN SOD FIRMLY - AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3-4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.



IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.



Source: Va. DSWC

Plate 3.33-2

TABLE 3.33-B**MAINTENANCE FERTILIZATION OF ESTABLISHED SOD****Cool Season Grasses**

4 lbs. nitrogen (N) per 1000 sq. ft./year
1 lb. phosphorus (P) per 1000 sq. ft./year
2 lbs. Potash (K) per 1000 sq. ft./year

75% of the total requirements should be applied between September 1 and December 31st. The balance should be applied during the remainder of the year.

Warm Season Grasses

Apply 4-5 lbs. nitrogen (N) per 1000 sq. ft. per year (between May 1st and August 15th).

Phosphorus (P) and Potash (K) should only be applied according to soil tests.

Maintenance fertilizations should utilize slow release fertilizers which reduce the number of applications per year and subsequently reduce the adverse impacts on groundwater.

Source: Va. DSWC